

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1 (Currently Amended) A method for testing *Streptococcus pneumoniae* for resistance to penicillin, the method comprising the steps of:

- a) isolating DNA from *Streptococcus pneumoniae*,
- b) hybridizing the DNA obtained in step (a) with at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* sensitivity-specific DNA probe and at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae* resistance-specific DNA probe, and
- c) determining whether or not said *Streptococcus pneumoniae* is sensitive to penicillin or not by detecting which probe or probes hybridize.

2 (Currently Amended) The method according to claim 1, wherein the DNA sequence of at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* consists of a DNA sequence sensitivity-specific probe is selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences which differ from said sequences by one to four nucleotides, ~~wherein SEQ ID NOS: 1-13 are, respectively:~~

AGT CAG CAA CGG GTA AG,
AAC GAA CGA TGG ACG GT,
CAT TTC CAG NCC CCT CCA,
TGC AGA TGC CAC GAT TC,
CTG GTC AGC TTC CTG CG,
TGG TTA TCT AGT CGG GTT AA,
CTG TAT CGA TGA GTC CG,
AAC AGT TCT GCT GAA GAA G,
TAG GAG CAC GCC ATC AGT,
GAC GAA ATG CCT ATC TTG,
CTC TCA ATT TGT AGC ACC T,
CTA TTC TAA CCG TCT GAC A, and
ATC AAA TAC CTA TAT GGT CC;
wherein N is any nucleotide.

3 (Currently Amended) The method according to claim 2, wherein the DNA sequence of at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* consists of a DNA sequence sensitivity-specific probe is selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, and SEQ ID NO: 13.

4 (Currently Amended) The method according to claim 1, wherein the DNA sequence of at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant

strains of *Streptococcus pneumoniae* consists of a DNA sequence resistance-specific probe is
selected from the group of ~~sequences~~ consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID
NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences which differ from
said sequences by one to four nucleotides, ~~wherein SEQ ID NOS. 14-19 are, respectively:~~

TGG AGA ATA NTT CAA TAG N;

GTC TAC TTG AAC AAA AAA TG;

TTA GTT GGG ACG GAC CCT;

GTA ACN NTT CAA CAG CCT;

CTC CGA NCA ATA CGT CTC T; and

GCT CCA GAT NAA ATG TTT GT;

wherein N is any nucleotide.

5 (Currently Amended) The method according to claim 4, wherein the DNA sequence
of at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant
strains of *Streptococcus pneumoniae* consists of a DNA sequence resistance-specific probe is
selected from the group of ~~sequences~~ consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID
NO: 16, SEQ ID NO: 17, SEQ ID NO: 18 and SEQ ID NO: 19.

6 (Original) The method according to claim 1, wherein the probes are labeled
radioactively.

7 (Currently Amended) The method according to claim 1, wherein the conditions for
hybridization are stringent conditions at 20°C below the melting point of the hybridizing
DNA.

8 (Currently Amended) The method according to claim 1, wherein DNA obtained in step (a) is hybridized with more than one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae* ~~resistance-specific DNA probe~~ and more than one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* ~~sensitivity-specific DNA probe~~.

9 (Currently Amended) The method according to claim 2, wherein DNA obtained in step (a) is hybridized with more than one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* ~~sensitivity-specific DNA probe~~ chosen from among said group.

10 (Currently Amended) The method according to claim 4, wherein DNA obtained in step (a) is hybridized with more than one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae* ~~resistance-specific DNA probe~~ chosen from among said group.

11 (Currently Amended) A method for testing *Streptococcus pneumoniae* for resistance to penicillin, the method comprising the steps of:

- a) isolating DNA from *Streptococcus pneumoniae*,
- b) exposing the DNA obtained in step (a) with at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* ~~sensitivity-specific DNA probe~~ and at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae*

~~resistance-specific DNA probe~~ under conditions ~~which can~~ that would permit hybridization, and

c) determining whether or not said *Streptococcus pneumoniae* strain is sensitive to penicillin or not by detecting which probe or probes hybridize;

wherein the at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* ~~sensitivity-specific probe~~ is selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences ~~which~~ that differ from these sequences by one to four nucleotides, ~~wherein SEQ ID NOS.: 1-13 are,~~ respectively;

AGT CAG CAA CGG GTA AG,

AAC GAA CGA TGG ACG GT,

CAT TTC CAG NCC CCT CCA,

TGC AGA TGC CAC GAT TC,

CTG GTC AGC TTC CTG CG,

TGG TTA TCT AGT CGG GTT AA,

CTG TAT CGA TGA GTC CG,

AAC AGT TCT GCT GAA GAA G,

TAG GAG CAC GCC ATC AGT,

GAC GAA ATG CCT ATC TTG,

CTC TCA ATT TGT AGC ACC T,

CTA TTC TAA CCG TCT GAC A, and

ATC AAA TAC CTA TAT GGT CG;

wherein N is any nucleotide; and wherein the at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae* resistance-specific probe is selected from the group of sequences consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences which that differ from these sequences by one to four nucleotides, ~~wherein SEQ ID NOS: 14-19 are, respectively:~~

TGG AGA ATA NTT CAA TAG N;

GTC TAC TTG AAC AAA AAA TG;

TTA GTT GGG ACG GAC CCT;

GTA ACN NTT CAA CAG CCT;

CTC CGA NCA ATA CGT CTC T; and

GCT CCA GAT NAA ATG TTT GT;

wherein N is any nucleotide.

12. (Currently Amended) The method of claim 11, wherein the at least one DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* sensitivity-specific probe is selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12 and SEQ ID NO: 13; and,

wherein the at least one DNA probe that hybridizes to a DNA sequence specific for penicillin resistant strains of *Streptococcus pneumoniae* resistance-specific probe is a probe or probes which specifically hybridize to the DNA of antibiotic resistant strains and are

selected from the group of sequences consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18 and SEQ ID NO: 19.

13. (Original) The method of claim 11, wherein the DNA isolated in step (a) is obtained from a strain of bacteria having unknown antibiotic sensitivity or resistance.

14. (Currently Amended) The method of claim 11, wherein DNA from said *Streptococcus pneumoniae* is exposed to more than one different DNA probe that hybridizes to a DNA sequence specific for penicillin sensitive strains of *Streptococcus pneumoniae* is a DNA sequence consisting of a sequence sensitivity-specific DNA probe selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences ~~which that~~ differ from these sequences by one to four nucleotides, under conditions ~~which that~~ can permit hybridization; and,

wherein DNA from said *Streptococcus pneumoniae* is exposed to more than one different resistance-specific DNA probe selected from the group of sequences consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences ~~which that~~ differ from these sequences by one to four nucleotides, under conditions ~~which that~~ can permit hybridization.

15. (Withdrawn) A penicillin sensitivity-specific DNA probe for determining penicillin sensitivity in *Streptococcus pneumoniae* selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5,

SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences which differ from said sequences by one to four nucleotides, wherein SEQ ID NOS.: 1-13 are, respectively:

AGT CAG CAA CGG GTA AG,
AAC GAA CGA TGG ACG GT,
CAT TTC CAG NCC CCT CCA,
TGC AGA TGC CAC GAT TC,
CTG GTC AGC TTC CTG CG,
TGG TTA TCT AGT CGG GTT AA,
CTG TAT CGA TGA GTC CG,
AAC AGT TCT GCT GAA GAA G,
TAG GAG CAC GCC ATC AGT,
GAC GAA ATG CCT ATC TTG,
CTC TCA ATT TGT AGC ACC T,
CTA TTC TAA CCG TCT GAC A, and
ATC AAA TAC CTA TAT GGT CC;
wherein N is any nucleotide.

16. (Withdrawn) A penicillin resistance-specific DNA probe for determining penicillin resistance in *Streptococcus pneumoniae* selected from the group of sequences consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences which differ from said sequences by one to four nucleotides, wherein SEQ ID NOS.: 14-19 are, respectively:

TGG AGA ATA NTT CAA TAG N,

GTC TAC TTG AAC AAA AAA TG,
 TTA GTT GGG ACG GAC CCT,
 GTA ACN NTT CAA CAG CCT,
 CTC CGA NCA ATA CGT CTC T, and
 GCT CCA GAT NAA ATG TTT GT;
 wherein N is any nucleotide.

17. (Withdrawn) A kit for performing the method of claim 1, comprising penicillin sensitivity-specific DNA probes for determining penicillin sensitivity in *Streptococcus pneumoniae* selected from the group of sequences consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and sequences which differ from said sequences by one to four nucleotides, wherein SEQ ID NOS.: 1-13 are, respectively:

AGT CAG CAA CGG GTA AG,
 AAC GAA CGA TGG ACG GT,
 CAT TTC CAG NCC CCT CCA,
 TGC AGA TGC CAC GAT TC,
 CTG GTC AGC TTC CTG CG,
 TGG TTA TCT AGT CGG GTT AA,
 CTG TAT CGA TGA GTC CG,
 AAC AGT TCT GCT GAA GAA G,
 TAG GAG CAC GCC ATC AGT,
 GAC GAA ATG CCT ATC TTG,

CTC TCA ATT TGT AGC ACC T,

CTA TTC TAA CCG TCT GAC A, and

ATC AAA TAC CTA TAT GGT CC;

wherein N is any nucleotide;

and further comprising penicillin resistance-specific DNA probes for determining penicillin resistance in *Streptococcus pneumoniae* selected from the group of sequences consisting of SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19 and sequences which differ from said sequences by one to four nucleotides, wherein SEQ ID NOS.: 14-19 are, respectively:

TGG AGA ATA NTT CAA TAG N,

GTC TAC TTG AAC AAA AAA TG,

TTA GTT GGG ACG GAC CCT,

GTA ACN NTT CAA CAG CCT,

CTC CGA NCA ATA CGT CTC T, and

GCT CCA GAT NAA ATG TTT GT;

wherein N is any nucleotide.

18. (New) A method for testing *Streptococcus pneumoniae* for resistance to penicillin, the method comprising the steps of

(a) isolating DNA from *Streptococcus pneumoniae*,

(b) contacting the DNA obtained in step (a) with a plurality of DNA probes that hybridize to DNA sequences of penicillin-binding-proteins (PBP) specific for penicillin sensitive strains for *Streptococcus pneumoniae* and a plurality of DNA probes that hybridize

to DNA sequences of penicillin-binding proteins (PBP) specific for penicillin resistant strains of *Streptococcus pneumoniae* under conditions that can permit hybridization, and

(c) determining whether or not said *Streptococcus pneumoniae* is sensitive to penicillin or not by detecting which probe or probes hybridize.